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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Tommi Koistinen

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EXAMINER

SCIACCA, SCOTT M

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/518,930	<b>Applicant(s)</b> KOISTINEN ET AL.	
	<b>Examiner</b> Scott M. Sciacca	<b>Art Unit</b> 2446	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 26-37 and 41-56 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-37 and 41-56 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

This office action is responsive to communications filed on May 17, 2010. Claims 26, 41, 45, 47 and 51 have been amended. Claims 26-37 and 41-56 are pending in the application.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26 – 28, 30, 37, 41, 42, 44 – 47, and 49 - 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. (US 2002/0194345) in view of Morrison et al. (US 2003/0235194)

Regarding claims 26, 41, 50, 51, 52, 53, and 54, Lu et al. teaches a method, comprising: obtaining a current connection state as well as a current load state of each of a plurality of processors configured to perform communication in a packet switched connection, **[FIG. 10D illustrates a server state table. The server state table is a dynamic part of the server table 186 shown schematically in FIG. 8. The server**

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**state table stores server load metrics that include: Current Connections; Current Load; Dynamic Server Weight and a count, (Lu et al., Paragraph 117)],**

selecting on a per received packet basis, by a load balancer configured to distribute load to said processors, a processor having a lowest load, **[a web switch is employed to switch an incoming client packet to one of many parallel web servers in a data center. In conventional implementations, its primary task is to perform a load-balancing function, i.e., to distribute an incoming packet to the least busy server among the server farm, (Lu et al., Paragraph 12)],**

in such a manner that a respective next received packet is distributed to the processors irrespective of a specific connection to which this next received packet belongs, **[Fig. 7, Ref # 220, 230, and 240, wherein the packet is distributed to the server irrespective of a specific connection to which next received packet belongs, (Lu et al., Paragraph 64)],**

and maintaining information about the load state of each processor so that said selecting is performed by selecting one of said processors to serve and process a respective received packet based on the load state, **[The load balancer 162 selects a server that can best serve the request associated with the packet based on the content class, server farm configuration and the current loads of the servers, (Lu et al., Paragraph 58)],**

informing the current connection state to respective processors comprising inserting data into a packet to be distributed, **[The application-related or Layer 7**

**message carried in a packet includes HTTP header and other HTTP payload such as data or other personalized information, (Lu ET AL., Paragraph 63)],**

Lu et al. fails to explicitly teach that connection state is inserted in a packet,

Morrison et al. teaches that the control information may be affixed to or inserted into the packet data by logic circuits that are external to the network processor, **(Morrison et al., Paragraph 22)**, in order to handle different networking protocols and yet does not spend significant amount of processing time selecting the appropriate codes for execution, **(Morrison et al., Paragraph 6)**,

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Lu et al., by including that the connection state is inserted in a packet, **(Morrison et al., Paragraph 22)**, in order to handle different networking protocols and yet does not spend significant amount of processing time selecting the appropriate codes for execution, **(Morrison et al., Paragraph 6)**.

Regarding claim 27, a method wherein said data storage is accessed by said load balancer, **[Load balancer accesses data stored on controller 120 as shown in Fig. 5].**

Regarding claim 28, a method wherein said data storage is accessed by said processors, **[Server farm which are the processors 30 accesses data stored on controller 120 as shown in Fig. 5].**

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Regarding claim 30, a method wherein a processor is selected in a round-robin fashion, **[the first type is "Round Robin", which chooses a server among a group in turns, (Lu et al., Paragraph 119)]**.

Regarding claim 31, a method wherein a supported service profile for each unit processor is maintained, **[it is necessary for a web switch to determine the type of service requested in order to select a server from the appropriate group, (Lu et al., Paragraph 13)]**.

Regarding claim 32, a method wherein said supported service profile is used as additional selection criteria, **[it is necessary for a web switch to determine the type of service requested in order to select a server from the appropriate group, (Lu et al., Paragraph 13)]**.

Regarding claim 33, a method wherein said load balancer is configured to obtain a load state from each processor upon a hardware based mechanism, **[the information to be sent out is increasing packaged for the specific hardware of the device, ending in Layer 1, which is the physical communication channel itself, (Lu et al., Paragraph 7)]**.

Regarding claim 34, a method wherein said load balancer is configured to obtain a load state from each processor upon a packet based mechanism, **[When all servers**

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**are busy, the application switch will give preferential treatment to the High priority inbound packets, and delay and/or discard Medium and Low priority inbound packets, (Lu et al., Paragraph 127)].**

Regarding claims 35, 47, 55, an apparatus according to claim 54, further comprising means for inserting a communication connection state into a packet to be routed, **[The application-related or Layer 7 message carried in a packet includes HTTP header and other HTTP payload such as data or other personalized information, (Lu et al., Paragraph 63)],**

Regarding claim 36, a method wherein a packet returned by a processor is interpreted as a flag for a free resource, **[Setting an Access Control List ("ACL") by looking at TCP/IP headers, and returning a flag for reject or allowed packet traffic, (Lu et al., Paragraph 95)].**

Regarding claims 37,49, and 56, a method wherein excess traffic is redirected to another load balancer, said excess traffic being defined upon the number of active processors, **[a method is provided to perform content-aware switching without incurring delay and excessive processing while initially waiting for content to become available in order to make switching decisions, (Lu et al., Paragraph 167)].**

Regarding claims 42 and 46, an apparatus, wherein a load state of a processor is contained in a table, **[Fig. 10D]**.

Regarding claim 44, an apparatus wherein a load state of a processor is expressed as value which corresponds to the percentage of load, **[it has been estimated that the packet classifier need only process five percent of all packet traffic, (Lu et al., Paragraph 78)]**.

Regarding claim 45, an apparatus, wherein said selection circuitry is configured such that a processor is selected also on the basis of a parameter indicating the service profile supported by a respective processor, **[it is necessary for a web switch to determine the type of service requested in order to select a server from the appropriate group, (Lu et al., Paragraph 13)]**.

Regarding claim 48, an apparatus according to claim 41, wherein the processors are comprised of multi core digital signal processing elements having a shared data storage for all cores, whereby said device comprises a first level of load balancing configured to select a digital signal processing means and a second level of load balancing configured to select a single core, **[a network processors, embodied by multiple programmable micro engines and a core processor, is used to implement and manage the various components, (Lu et al., Paragraph 148)]**.



Claims 29 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. (US 2002/0194345) in view of Morrison et al. (US 2003/0235194) and further in view of Szabo et al. (US 2002/0138618)

Regarding claims 29 and 43, The modified Lu et al. teaches a that the load balancer 162 selects a server that can best serve the request associated with the packet based on the content class, server farm configuration and the current loads of the servers, **(Lu et al., Paragraph 58)**,

The modified Lu et al. fails to teach a method wherein said information about the load state is maintained as a Boolean state,

Szabo et al. teaches Boolean variables that are packed into the flags field as shown in Fig. 15, **(Szabo et al., Paragraph 102)**, in order to switch and otherwise respond to incoming requests by directing them to one of the servers, **(Szabo et al., Paragraph 8)**,

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the modified Lu et al. by including that said information about the load state is maintained as a Boolean state, **(Szabo et al., Paragraph 102)**, in order to switch and otherwise respond to incoming requests by directing them to one of the servers, **(Szabo et al., Paragraph 8)**.

***Response to Arguments***

Applicant's arguments filed on May 17, 2010 have been fully considered but they are not persuasive.

**On pages 8-9 of the remarks, Applicant argues in substance that the U.S. Provisional Application Serial No. 60/385,980 which Morrison claims priority to does not disclose the portions of Morrison that the Examiner has relied upon for rejecting the pending claims.**

Examiner disagrees. According to MPEP 2136.03, "The 35 U.S.C. 102(e) critical reference date of a U.S. patent or U.S. application publications and certain international application publications entitled to the benefit of the filing date of a provisional application under 35 U.S.C. 119(e) is the filing date of the provisional application with certain exceptions if the provisional application(s) properly supports the subject matter relied upon to make the rejection in compliance with 35 U.S.C. 112, first paragraph." According to MPEP 1302.01, "It should be noted, however, that exact terms need not be used *in haec verba* to satisfy the written description requirement of the first paragraph of 35 U.S.C. 112. *Eiselstein v. Frank*, 52 F.3d 1035, 1038, 34 USPQ2d 1467, 1470 (Fed. Cir. 1995); *In re Wertheim*, 541 F.2d 257, 265, 191 USPQ 90, 98 (CCPA 1976)." While the language of paragraphs [0006] and [0022] from Morrison is not taken verbatim from the provisional application, the subject matter disclosed in the provisional application provides adequate support for the cited portions of paragraphs [0006] and [0022] such

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that the filing date of the provisional application may be relied upon to establish the 102(e) date Morrison publication.

For example, the portion of paragraph [0006] that was cited as disclosing a network processor that can handle different protocols is supported by the material disclosed on page 1 of the provisional application (*"Flipper can be configured such that different groups of ucode engines can support different packet types, so for instance it could have half of the engines processing AAL5 frames while the other half is processing POS frames."*). Note that AAL5 (ATM Adaptation Layer 5) and POS (Packet over SONET/SDH) are different protocols which the processor is capable of handling.

Additionally, the portion of paragraph [0022] that was cited as disclosing that control information may be affixed to or inserted into the packet data is supported by the material disclosed on page 2 of the provisional application:

```
"pkt_type_dst_info :
  This eight bit register (bits[7:0] - RHM_CTL_REG_1) per RHU directs traffic for
  each packet type to one or both of the two banks of engines.
    pkt_type_dst_info[1:0] - pkt type 0
    pkt_type_dst_info[3:2] - pkt type 1
    pkt_type_dst_info[5:4] - pkt type 2
    pkt_type_dst_info[7:6] - pkt type 3
  The 2-bit value for each pkt type needs to be set as below :
    00 - only bank 0
    01 - only bank 1
    1x - both banks"
```

In further support of the subject matter cited from paragraph [0022] of the Morrison publication, page 3 of the provisional application discloses:

```
"Based on the packet type of the received packet, the receive unit at each of the HST
links (RHU) does a lookup. The lookup result for a certain packet type could have one of
three settings :
  setting 0 - forward to only bank 0
  setting 1 - forward to only bank 1
  setting 2 - forward to any of the two banks
In case of setting 2 packets are alternated between the two banks."
```

Thus, the portions of the provisional application cited above provide support for paragraph [0022] of the Morrison publication by disclosing information about packet

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type being affixed to packets which is used to control which bank of processors the packet will be forwarded to.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott M. Sciacca whose telephone number is (571) 270-1919. The examiner can normally be reached on Monday thru Friday, 7:30 A.M. - 5:00 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Pwu can be reached on (571) 272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Scott M. Sciacca/  
Examiner, Art Unit 2446

/Jeffrey Pwu/  
Supervisory Patent Examiner, Art Unit 2446